Air Traffic Services Performance Plan for Fiscal Years 1998-2000

PREFACE

I am pleased to present this edition of the ***Air Traffic Services Performance Plan.*** It reflects the strategic blueprint for ATS to meet the challenges facing the aviation community as we move into the 21st Century. The evolution of this document, and changes included in each new edition, affirm our commitment to meet the changing needs of our aviation customers. In this plan we attempt to show our understanding of the communities air traffic service needs and explain how we are currently meeting those needs or planning to in the future.

In the last year, ATS has responded to its external and internal needs by taking action on several fronts, including implementing procedural changes, and deploying critical infrastructure components and developing new capabilities for the Air Traffic Management System. This plan reaffirms ATS' dedication to meeting the need for safe, efficient, timely, and innovative services.

My sincere thanks to those who have contributed to the production of the plan, and to those who will make it a reality.

Steven J. Brown

Acting Associate Administrator

for Air Traffic Services

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Introduction to Air Traffic Services

The mission of the Air Traffic Services (ATS) organization is to ensure the safe and efficient operation, maintenance, and use of the air transportation system today and meet tomorrow's challenges to increase system safety, capacity, and productivity. ATS consists of men and women who work as air traffic controllers, engineers, systems specialists, pilots, flight inspection personnel, procedures development specialists, business managers, accountants, administrators, managers, secretaries, and support. Our 36,500 employees:

- control over 200,000 aircraft takeoffs and landings per day;
- provide 24 hours of air traffic control daily;
- manage the National Airspace System (NAS) infrastructure by operating and maintaining 38,000 facilities/systems;
- maintain 11,000 terminal instrument flight procedures, adding 500 GPS per year, and 9,000 airway segments;
- annually conduct over 11,000 flight inspections nationally and internationally to preserve the safety, quality, and reliability of the airspace system;
- assign and protect more than 50,000 aeronautical radio frequencies used in air traffic control;
- direct and evaluate the modernization of the NAS infrastructure.

The United States is recognized as the world's leader in aviation safety – largely through the professionalism and expertise of ATS employees.

ATS employees work throughout the United States in office buildings, in air traffic control and maintenance facilities, and worldwide in support of the United States military and foreign air traffic control systems. ATS employees work in:

- Air Route Traffic Control Centers (ARTCC). There are 24 centers which control en route traffic for the United States and parts of the Atlantic and Pacific Oceans. A typical center has responsibility for more than 100,000 square miles of airspace that generally extends over a number of states. ATS workers not only control the air traffic, but also make sure the complex equipment is maintained and in working order.
- Flight Service Stations (FSS). Over 75 automated flight service stations (AFSS) and flight service stations (FSS) provide assistance to more than 600,000 licensed pilots who fly civilian aircraft in the United States, the Virgin Islands, and Puerto Rico. AFSSs serve the majority of pilots. General aviation pilots, as well as the military flyers, use FSSs and AFSSs to obtain information about terrain, pre-flight and in-flight weather information, suggested routes, altitudes, indications of turbulence, icing, and any other information important to the safety of their flight.
- Airport Traffic Control Towers (ATCT). Located at over 400 airports, ATS and contract employees direct the landing and takeoff of airplanes and control the ground traffic, as well as maintain the equipment.

- Terminal Radar Approach Control (TRACON). Over 185 TRACONs provide radar separation to arriving and departing flights. TRACONs operate in airspace approximately within a 30 mile radius and normally less than 15,000 ft. altitude, exclusive of ATCT airspace. Like other facilities, TRACONs have engineers and system specialists on-site to maintain and troubleshoot the equipment, software, and hardware.
- In the Air. To ensure the safety of the system and to check the reliability of the navigation aids, ATS employees fly through the system 24 hours a day, using specially equipped airplanes.
- Research. ATS employees are constantly working to make the air traffic system safer and more efficient. To ensure the reliability and safety of the equipment used in the NAS, ATS employees test and evaluate all new equipment before it becomes operational.

Strategic Overview

Aviation Industry Outlook

As the United States civil aviation community enters its second century of operation, a myriad of factors will challenge our ability to maintain the role of world leader in aviation safety. By the year 2016, our customers will be operating in a global environment where increased traffic growth is expected. World revenue passenger miles are expected to more than double over the next 20 years, with airlines around the world carrying two and a half billion passengers each year. Air cargo will also grow, averaging a 6.6 percent increase per year during the next 2 decades. The market for new aircraft over the next 20 years will be almost one trillion dollars—more than twice the size of the market during the past 20 years. United States domestic passengers will double and commuter/ regional passengers will triple, together totaling over one billion passengers carried in the year 2010. General aviation is expected to reverse its current downward trend to become more vibrant in the business and recreational sectors.

In addition to anticipated growth, users will be operating new and diverse civil and military aircraft and systems within the NAS. Airline inventories will increase by 50 percent and will include larger, heavier aircraft. The size of the regional commuter fleets will double and include a greater percentage of sophisticated aircraft. The general aviation fleet is expected to grow at a modest nine percent over the same period.

Air Traffic Services' Leadership Role

As the global transformation of aviation evolves and accelerates over the next 2 decades, NAS users will need a system that is flexible enough to ensure the highest levels of safety even while it undergoes dynamic changes. Commercial users will continue to face the challenge of delivering high quality services through on-time performance, convenience, and low cost. Non-scheduled carriers, military, business aircraft, and recreational users must also be accommodated within the NAS to keep aviation a viable transportation alternative and robust industry. With a sharp increase in international travel also

expected, both foreign and domestic air carriers will demand greater harmonization between United States and foreign air traffic management (ATM) systems to ensure safe and efficient flight.

Increased operational demand, the diversity of aircraft, changing technology, and globalization of the airline industry present ATS with challenging opportunities. ATS is committed to providing the leadership in business decisions necessary to address the task of assuring a safe, reliable, and efficient air traffic control (ATC) system.

Customer Collaboration

ATS has focused on the aviation community as its direct customer and recognizes that these customers desire to be better served, not controlled. These customers need different and better types of services if they are to remain economically viable, and serve the ultimate public interest in safe, affordable air travel. ATS services must enable our customers to accomplish their operational objectives in a safe and efficient manner and must also be mutually agreeable to all operational components of the ATS organization. ATS also bears a responsibility to American taxpayers to provide these services to the industry and the flying public at a reasonable cost.

ATS direct customers include: domestic and international commercial air carriers for passengers and freight; general aviation, i.e., business and pleasure flyers; military flights; commercial and private pilots; and commercial space transportation. These customers have diversified objectives and goals. Even within the same broad category—such as commercial air carriers—there are many different operating paradigms and different objectives. As the primary provider of services to this multi-faceted group, ATS must listen to everyone's needs, balance those needs, and then collaboratively act to meet those needs.

NAS Modernization

In 1997, the FAA’s Administrator identified NAS Modernization as an area critical to the aviation community and the Nation's economic well being. A key component of NAS Modernization is the replacement of the aging equipment in the ATC facilities. ATS has strongly supported two critical modernization programs: the Display System Replacement and the Standard Terminal Automation Replacement System.

Improvements in infrastructure are just the first step toward addressing the aviation system's pressing need to increase system efficiency and capacity. To meet the challenges of these needs, the Administrator formed a task force of government and industry leaders to focus on two things: first — to thoroughly review the NAS architecture, and second — to examine "how" and "when" the FAA should implement the new architecture to support free flight. ATS has played a crucial role in this task force, working to develop a proposal that would bring free flight capabilities to the system sooner. This proposal is called Free Flight Phase 1, and contains several automation and decision -making tools that are being tested now that could be introduced into the system incrementally. This incremental approach would bring user benefits to the system sooner and it would allow the FAA to modernize the NAS gradually, in a building block fashion.

The NAS Modernization Task Force also identified the need to find ways to increase success in fielding large, expensive communication, navigation, and surveillance (CNS) systems. The challenges associated with developing and deploying major CNS systems include avionics costs, equipment certification, procedures, human factors, and user acceptance. ATS and the NAS Modernization Task Force are working to restructure the Flight 2000 program to focus specifically on learning more about these issues. It is expected that this restructured program can increase the FAA's success in fielding these larger, expensive programs aimed at transitioning the NAS to a modern, state-of-the-art system.

Success of modernization efforts also involves new approaches to resolving human factors issues. ATS and other FAA management and the air traffic controllers' union, NATCA, have made great strides toward ensuring that users of the equipment must be actively involved in the development of new systems from beginning to end. ATS is also working closely with the Airway Facilities technicians to resolve human factors issues associated with maintaining the equipment.

In this Performance Plan, ATS has used the recommendations and findings of the NAS Modernization efforts to focus and refine its approach to setting performance outcomes and strategies.

ATS' Service Focus

ATS looks at the *services* that it delivers to meet the needs of its customers, the users of the air transportation system. This focus on service delivery ensures that ATS provides high quality, cost-effective services to present and future customers on a continuing basis. These services and associated performance outcomes, described in more detail below, form the basis for customer service standards and measures, investment decision criteria, Government Performance and Results Act (GPRA) outcomes, and cost accounting and financial management information. There are three broad classes of ATS services:

- **Primary Operational Services** include separation assurance, traffic management, aviation information, navigation, and landing. These services, which combine to form the NAS, are most visible to the end user and comprise the largest investment of ATS human and equipment resources.
- **Management of National Resources Services** include airspace management and spectrum management. These services and the resources they manage are largely transparent to the aviation system user, but are nonetheless critical to safe and efficient flight. As custodians, the ATS role is to protect, justify, and plan for the efficient use of these finite resources.
- **Other Services**, not directly related to ATC, include search and rescue (SAR) and aviation assistance services.

There are many enabling activities provided by ATS organizational units that, in total, contribute to the delivery of a service or services. Each service provided directly to a customer generally has a number of enabling activities that may or may not be visible to external customers; however, all of these activities need to function efficiently and smoothly for effective service delivery to the end customer. For example, provision of primary operational services requires the following enabling activities:

- Performing studies and building models to evaluate potential system changes;
- Defining current and future requirements for improving service delivery;

- Performing independent operational test and evaluation on new systems and equipment to ensure that operational requirements are met prior to a national deployment decision; and
- Installing, operating, maintaining, certifying, and flight inspecting equipment within the NAS.

To provide these services and activities, the ATS line of business incorporates the offices of Air Traffic, Airway Facilities, System Capacity, Independent Operational Test & Evaluation, and the Systems Requirements Service, into a single organization—one that integrates all core elements of the ATC system (Figure 1).

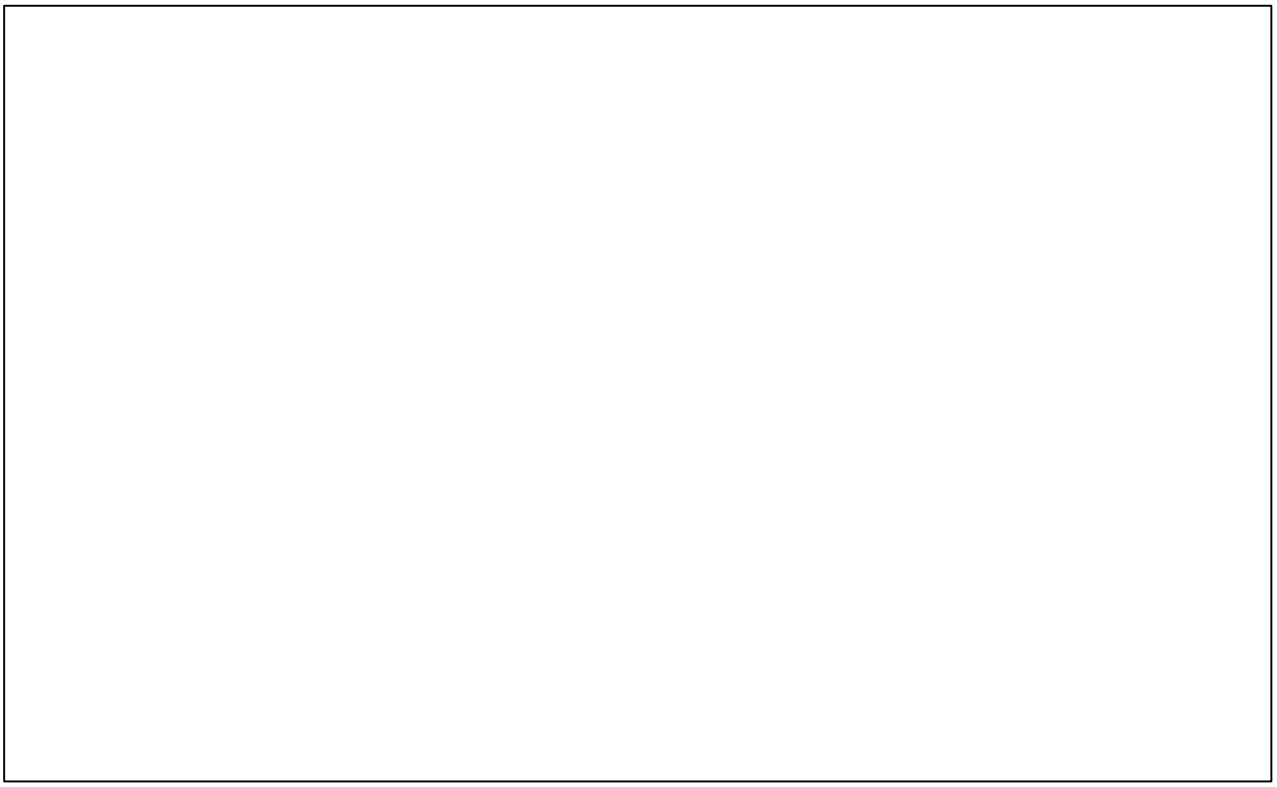

Figure 1. ATS Organization

Primary Operational Services

From the time pilots begin pre-flight activities until they safely shut down the aircraft at their destination, ATS employees provide an integrated set of services to ensure that each aircraft operation is safe. These "primary operational services" include separation assurance, traffic management, navigation, landing, and information services. Each of these services is described in more detail below.

Separation Assurance

Separation assurance services ensure that aircraft can maintain a safe distance from other aircraft, terrain, obstructions, and certain airspace not designated for routine air travel. ATS ATC's employ separation rules and procedures that define separation standards for the many different environments where aircraft operate. Pilots using instrument procedures rely on ATC instructions to guide them. Pilots flying under visual flight rules support separation assurance under a "see and avoid" policy. When workload permits, controllers also provide traffic advisories and safety alerts to pilots who request them. To ensure safety in the busy airspace surrounding an airport and on the airport surface, specialists in ATC towers sequence aircraft for takeoffs and landings, assign aircraft to available runways, and enforce a set of surface movement procedures.

A myriad of systems support controllers in separating the large number of aircraft that fly through NAS airspace. Communications systems are essential to providing the mechanisms for controllers and pilots to interact, share information, and work together to guide aircraft safely. Radar systems, computer-automated data processing and display systems are used to monitor aircraft positions and traffic situations, allowing controllers to provide separation services to many aircraft and increase the efficiency of the ATM system. ATS system specialists and engineers ensure that these systems are working, and if a failure occurs, address problems quickly and efficiently. ATS is working constantly with other FAA organizations and users to enhance and upgrade these systems and develop valuable tools to allow controllers to continue the high-level of separation services that are essential to safe flights.

Traffic Management

Traffic management involves coordinating the large number of aircraft using the ATM system at any given period of time, as well as coordinating the routes that these aircraft fly. ATS personnel ensure the safe, orderly, and efficient movement of aircraft under conditions that vary based on a number of different factors including weather conditions, equipment availability, and runway constraints.

The current traffic management service is a procedure-based, manual interaction between ATM specialists and ATS customers to ensure demand is balanced with available capacity. Traffic management specialists at the Air Traffic Control System Command Center (ATCSCC), the traffic management units at en route centers, and traffic management units at terminals perform a wide- range of activities including: managing ground stop and ground delay programs, formulating national flow management plans in coordination with Airline Operations Centers (AOC), balancing the air traffic flow within an en route center's airspace, sequencing and spacing aircraft on final approach, coordinating arrival and departure flows with adjacent facilities, and formulating taxi sequences and communicating instructions to pilots for the safe and efficient flow of traffic on the airport surface.

Aviation Information

ATS gathers, processes, and disseminates aeronautical information in support of the safe and efficient operation of aircraft. The variety of information that ATS handles includes weather information, aeronautical charts and related flight information publications, tactical and strategic ATC and traffic management information, the status of NAS facilities and equipment, flight plans, and notices to

airmen. ATS relies on a variety of media, including publications, voice and data communications by radio and telephone, computer bulletin boards, World Wide Web pages, and face-to-face meetings to share information with customers.

Recent enhancements to information exchange enable real-time data link communications between ATC and the cockpit for flight information and planning. ATS has also participated in operational trials of oceanic data link capabilities to enable reductions in oceanic separation standards that increase airspace capacity and maintain safety.

Navigation

ATS' navigation services provide guidance to pilots to determine their location and navigate from point-to-point during flight through an established network of visual and electronic navigation aids (navaids). ATS personnel prescribe standards for the operation of any navaid used for instrument flight in federally controlled airspace regardless of the ownership of the navaids. They also establish, operate, and maintain a majority of the terrestrial navigational aids used by the aircraft to determine their position. Navigation is one of the few services provided directly to the aircraft by the NAS infrastructure.

Nearly all airspace users utilize navigation services to move from location to location. Navigation services are critical to assure confidence in one's geographic location, particularly when flying under instrument flight rules. The navaids themselves are owned by many organizations: the ATS' Airway Facilities section, military, private organizations, individual states and foreign governments.

Once established, navigation services are provided directly to aircraft by keeping navaids operating continuously; visual aids are operated during poor visibility. Users are notified when any navaid is taken out of operation for preventive or corrective maintenance. In many cases, users report faulty navaid operation to the FAA. Proper operation of a navaid to prescribed standards is checked periodically by several means including the use of flight checks.

Landing

ATS' landing services provide guidance to pilots to determine their position for takeoffs, landings, and airport movements. These services are provided through a network of visual and electronic aids established on and in the vicinity of airports. Landing aids provide aircraft information on the location, the approach, the height above the ground, and alignment with respect to the centerline of the runway. Landing services are closely aligned to navigation services, and will become even more so as satellite-based Global Positioning System (GPS) technology becomes more prevalent in the future.

To provide this service, ATS personnel prescribe standards for the operation of landing aids used for instrument flight in federally controlled airspace regardless of the ownership of the aids. They establish, operate, and maintain most of the terrestrial landing aids used by aircraft to determine their path to/from the runway. They also design, flight check, and publish instrument approach procedures which determine the routes and altitudes that aircraft will fly when approaching a specific airport under marginal weather conditions.

Management of National Resources

The service areas comprising this category include *airspace management* and *spectrum management.* ATS has custodial management responsibility for these two national resources, which are critical to the aviation industry. The ATS role is to maximize the utility of these resources to the aviation end user and to protect, justify, and plan for their efficient use. Each of these services is described below.

Airspace Management

ATS manages the finite airspace resource to balance the varied needs of user groups in a safe and efficient manner. The existing airspace structure was designed around the concept that airspace can be partitioned into volumes that air traffic controllers could monitor and maintain separation. All airspace actions must consider not only safe and efficient operations of the users, but also environmental issues such as noise abatement. Airspace is divided and classified in many ways, including high altitude, low altitude, en route, terminal area, and special use airspace (SUA). SUA includes prohibited areas, restricted areas, military operations areas, and others. Rule-making actions must be initiated to change the airspace structure.

Airspace management functions are widely dispersed, with responsibility delegated to the FAA regions, and operational airspace changes further delegated to the en route centers. ATS also provides a central office that identifies airspace design/redesign activities being conducted and includes them into a broader view for systemwide planning. Increased traffic and changing customer needs have required changes in operations and traffic management and have highlighted the need for airspace management to evolve and focus on a national perspective.

Spectrum Management

Under Federal law, the FAA is the custodian of all aeronautical spectrum required to support communications, navigation, and surveillance (CNS) systems in the NAS. This spectrum must be available at all times and be free of radio interference. ATS strives to maintain a cost-effective CNS network to enhance both air safety and the effectiveness of ATM.

ATS recognizes that the aeronautical frequency spectrum is a finite resource. As demand for commercial communications services continues to grow, it is ATS' responsibility to justify the spectrum allocated for aeronautical use and ensure that sufficient spectrum is available – both currently and in the future – for the safe and efficient operation of the system.

ATS spectrum management activities include allocation of radio frequencies among competing aeronautical needs, assignment of frequencies to specific users, coordination of frequency use so that interference is avoided, and implementation of radio communications services in ways that conserve frequency spectrum. Because it is vital that radio spectrum be available when needed and be free of interference, ATS takes immediate action to investigate and resolve radio frequency interference. Strategic aspects of aeronautical spectrum management include: development and implementation of

engineering criteria and standards; planning of spectrum for future CNS services; justification of spectrum requirements given competing commercial demands; and, coordination with DOD concerning electronic countermeasure exercises and DOD ATC frequency assignments.

Other Services

The final class of ATS services includes *search and rescue (SAR)* and *aviation assistance*. These services are provided to a variety of customers—both direct users of the NAS and other entities that conduct aviation system related activities both domestically and internationally.

Search and Rescue

ATS initiates SAR activities after determining that an aircraft may be overdue, lost, or downed. While the physical search activities are coordinated by Rescue Coordination Centers in accordance with the National Search and Rescue Plan and conducted by other federal, state, and local organizations, ATS assists in the process by providing information and direction.

ATS personnel collect/disseminate VFR flight plan information to ensure that SAR services are provided, if necessary. They alert the SAR system when information is received from any source that an aircraft is overdue, missing, or having difficulty. An aircraft overdue at its destination, or loss of radar or radio contact without proper termination can initiate SAR.

Aviation Assistance (Domestic and International)

ATS provides assistance to local, state, and other Federal agencies, foreign agencies, and private entities in support of their aviation activities. This assistance supports the Federal mandate for safety, standardization of procedures, promotion of technology and national commerce. Through this service, ATS provides the customers with access to our aviation technology and methodology including training and certification, while promoting aviation standards and United States aviation related commerce.

Aviation assistance services encompass a wide-range of activities such as planning of airspace and airports; procurement; infrastructure management; development of training programs; development and publishing of relevant aviation documents and charts; flight inspection of aviation equipment, facilities and services (civil and military); and law enforcement information support to other entities such as Customs and Drug Enforcement. When required, other Federal and civil agencies may assist the FAA in providing aviation assistance.

Operational Performance Management

ATS views its provision of services not as discrete, independent products, but as a cohesive bundle that results in seamless delivery of the information, direction, assistance or other cooperation needed by the system user. To ensure that ATS is providing and developing the right type and level of services to its customers, it has generated customer-oriented, outcome-based system performance measures. These measures have been formulated in consultation with the user community and represent the operational *outcomes* desired by system users that reflect ATS' overall performance across all services that it provides. The purpose of these outcomes is to focus the organization on actions that will provide value to the user of the system. ATS is committed to using outcomes and performance measures that are meaningful to its customers, and will continue to work with the user community to refine and improve both the measures and the underlying data on which they are based. The performance outcomes are:

- Increase System Safety
- Decrease System Delay
- Increase System Flexibility
- Increase System Predictability
- Increase User Access
- Improve Service Delivery by Increasing the Availability of Critical Systems
- Increase Productivity
- Create a Model Work Environment

It must be emphasized that safety will not be compromised as ATS strives to reduce delays and to make the system more flexible, predictable, accessible, and available. ATS recognizes that it may not always be possible to improve flexibility, predictability, access, delay, and availability simultaneously. There may be times when it will be necessary to balance one against another in order to meet financial or technical constraints. Moreover, the appropriate balance may change as ATS gains experience with these performance measures and, most importantly, when the needs of the user community change.

Several of the measurements and values shown in the figures under the following outcomes have been re-calculated using experience that ATS has gained over the last year of its performance planning. One of the major changes has been to use operations counts that reflect all operations in the NAS, including operations at contract towers. This change was made to ensure that the performance assessments were made on all operations in the NAS.

The ATS performance outcomes and strategies relate directly to the missions, strategic focus areas, corporate objectives, and key projects defined in the FAA Strategic Plan and FAA Performance Plan.

Outcome #1: Increase System Safety

ATS' primary responsibility is for the day-to-day safe operation of the ATM system. To accomplish this, ATS applies a set of standards that define spacing distances between multiple aircraft, aircraft and other physical structures, and aircraft and airspace. ATS measures system safety through its ability to maintain these standards. When aircraft are allowed to violate these separation standards, an

operational error occurs. Similarly, when aircraft are allowed to penetrate airspace that has not been pre-coordinated for that aircraft's use, *operational deviations* occur. Figure 2 shows the operational errors (2a) and operational deviations (2b) as rates per 100,000 operations. **By FY 2000, the ATS performance target is to reduce the rates of operational errors and operational deviations by 10 percent from 1994 baseline.**

Figure 2a. Operational Error Rate ***Figure 2b. Operational Deviation Rate***

A critical area where ATS has taken a leadership role in improving safety is reducing runway incursions. A runway incursion is any occurrence at an airport involving an aircraft, vehicle, person or object on the ground that creates a collision hazard or results in loss of separation with an aircraft. The aircraft can be involved in taking off, intending to take off, landing, or intending to land. ATS classifies runway incursions into three categories based on the entity that causes the incursion. Surface operational errors which are violations of standards on the airport's surface and an important subset of operational errors, are those incursions caused by air traffic controllers. Pilot deviations refer to those incursions caused by pilots, and vehicle/pedestrian deviations are those caused by vehicles or pedestrians. In 1997, the percentage breakdown among the three categories was:
25 percent surface errors, 55 percent pilot deviations, and 20 percent vehicle/pedestrian deviations. ATS is committed to reducing all runway incursions, regardless of cause, and has sponsored a number of programs and initiatives aimed at improving this important safety indicator. **By FY 2000, the ATS performance target is to reduce the total number of runway incursions by 15 percent from the CY 1997 baseline.** This initiative to reduce the total number of runway incursions by 15 percent includes sub-targets to reduce surface errors by 10 percent; pilot deviations by 20 percent; and vehicle/pedestrian deviations by 10 percent.

Strategies to Meet the Safety Target

Maintaining the highest levels of safety in air travel and transport is the primary consideration in all operational decisions. ATS has developed a variety of formal and informal opportunities to surface and resolve safety issues. One of these is the ATS Safety Council which plays an important role in developing strategies to meet safety targets. The council serves as a means to focus senior management's attention on critical safety issues as well as to verify that safety concerns have been considered and addressed in program planning and design. The council also reviews current safety

indicators and measurements, and serves as a forum for addressing safety issues in a non-punitive, positive environment.

One of the major approaches to reducing operational errors and deviations is to provide a common level of understanding of procedures and policies among NAS operators and users that will ensure safe operations. Training for controllers and cross-educational programs between pilots and controllers are central to this, and will continue to be the focus of ATS safety strategies.

Enhancements and changes in separation assurance services also positively impact the safety outcome and associated targets for reduction of operational errors and operational deviations. Technological improvements such as deployment of modern displays, automation tools, decision support tools, and communications systems will support better determination of aircraft location and resolution of potential conflicts both in the air and on the airport surface. The specific milestones that ATS will achieve in the 1998-2000 timeframe include:

- Conduct operational error workshops to address those areas where performance trends show increases.
- By mid-1998, publish the new action plan for runway incursions. By September 1998, implement near-term strategies identified in the May 1997 Surface Error Prevention Workgroup at applicable control towers to prevent and reduce surface errors.
- Complete independent assessment of the Airport Movement Area Safety System (AMASS) in 1998. Deploy the full-scale development system of AMASS at Detroit-Metropolitan, St.Louis-Lambert, and Atlanta-Hartsfield airports in 1998 and 1999. Install remaining AMASS production systems in 2000. AMASS will begin to provide information on airport surface safety hazards and will help protect against runway collisions.
- Provide environmentally safe facilities through regulatory compliance by participating in development of a national compliance plan to reduce agency liability. Complete replacement of remaining underground fuel storage tanks by September 1998.

Outcome #2: Decrease System Delays

The traditional measure of the efficiency of the ATM system is *delay*. Delay in the aviation system occurs when an activity does not occur within the planned, expected, or scheduled time. Delays are not always avoidable. Weather can close a runway or whole airport, making it impossible to land at the scheduled time. Or, an airline's caterer can go to the wrong gate, causing an aircraft to have to delay its departure until the plane can be serviced.

ATS tracks delays caused by ATC equipment and volume, as well as weather and other factors over which it has less control. ATS recognizes that any delay is a disruption in the expected level of service and is committed to reducing all delays. Delays caused by equipment failures and high levels of volume are of particular concern, and ATS has a number of initiatives underway that are targeted at aggressively reducing these delays. Figure 3 shows the actual rates for equipment and volume related delays from FY-92 through FY-97. Also, the baseline and the target for FY-00 are shown. **By FY 2000, the ATS performance target is to reduce the rates of volume and equipment related delays by 20 percent from 1994 baseline**. This baseline has been re-evaluated from the levels used in the 1997-1999 Performance Plan. The current baseline uses an average delay calculation based on data from 1992 through 1996.

Figure 3. Delay Rates

There are recognized limitations to the methodology currently used by ATS to measure delays in the aviation system. One of the primary problems is that this method does not track any delays less than 15 minutes. ATS records the number of aircraft delayed in excess of 15 minutes during any specific phase of flight. For example, if a flight is delayed during takeoff by 16 minutes, that delay is recorded. Similarly, if the same flight is delayed 17 minutes on landing, that delay is also recorded. If the landing delay were only 12 minutes, that delay would not be counted.

ATS is committed to reducing all delays, and is working to define new methods for tracking all delays that are experienced in the system. These methods will incorporate improved information about flight times obtained from aviation users. While such changes may increase the number of delays that are recorded, these improvements to the current delay recording methodology will help ATS in its goal to continue to manage delay and other negative impacts.

Strategies to Meet the Delay Target

Several service improvements—mainly in traffic management and aviation information—will impact the delay outcome. Additional system and airport capacity will allow aircraft to operate with minimal delay. Employing user perspectives in decisions concerning national ground delay programs will allow users to submit solutions that help to reduce the magnitude of the delay impact. Delays created by system and equipment outages will be reduced as components of the NAS infrastructure are replaced. While delays associated with weather are harder to influence, ATS is supporting the implementation of automated weather detection and forecasting tools to mitigate the negative impacts of these delays. The specific milestones that ATS will achieve in the 1998-2000 timeframe include:

- Implement new procedures that take advantage of additional runway and airport capacity increases at various locations.
- Continue development of the Center-TRACON Automation System's (CTAS) Passive Final Approach Spacing Tool (pFAST) and single-center Traffic Management Advisor (TMA) through 1998. TMA and pFAST will aid in evaluating the final approach environment, and increase airport acceptance rates. Daily usage of pFAST is planned for Dallas-Fort Worth in late 1998, with a decision on sites for initial operational deployment by the end of 1998. This deployment will begin in 1999 and 2000 for those selected sites.
- Field infrastructure replacement programs that will reduce equipment-related delay. Beginning in 1998, the Display System Replacement (DSR) and in 1999, the Standard Terminal Automation Replacement System (STARS) will replace an aging display and computing infrastructure that have caused several high-visibility delays. Complete delivery of 12 DSR's to ARTCC's by September 1998. Early Display Configuration (EDC) of STARS will be operational at Reagan-National Airport by March 1999.
- Implement an improved weather system, Weather and Radar Processor (WARP), to mitigate the impacts of weather in 1999. Begin testing of the Integrated Terminal Weather System (ITWS) in 1999.
- Identify technologies and procedures that will improve air traffic delay reporting, and implement improved delay reporting system in 1999.
- In 1998, integrate airport capacity needs in the NAS by participating in a joint team comprised of Airports, ATS, and other applicable agency offices.
- In 1998, as part of the National Airspace Redesign, begin the problem identification phase of the Eastern Triangle. As these analyses are conducted, ATS will ensure that airspace redesign actions are identified so that airspace efficiency and airport capacity are maximized.

Outcome #3: Increase System Flexibility

National airspace users expect more from the ATM system than strictly the minimization of delay. They desire the capability to optimize their operations based on their own objectives and constraints, which vary flight-by-flight and user-by-user. Measuring the flexibility of the ATM system allows ATS to evaluate its ability to permit users to adapt their operations to changing conditions. ATS has developed a new family of measures that quantify the flexibility of the ATM system from the

perspective of the user. The performance measures described here examine the level of flexibility available to users as they plan and execute their flights.

Users sometimes experience inflexibility during the flight planning process. Many of the most heavily traveled routes in the system have published ATC preferred routes, which are designed to minimize conflict in congested airspace. However, these routes often differ significantly from the routes that pilots or flight planners would normally propose between two cities.

The National Route Program (NRP) offers the user community flexible, cost-effective routing options as an alternative to published ATC preferred routes. From January 1995 to October 1996, the NRP was expanded in 10 phases, with each phase lowering the base altitude required for participation. NRP operations are currently authorized at and above FL290 (29,000 ft.) across the contiguous United States. Additionally, NRP flights are not subject to route limiting restrictions beyond a 200 nautical mile radius of their point of departure or destination. Participation has increased with the implementation of each phase. In October 1995, there was an average of 600 daily NRP flights. By October 1997, the average had doubled to 1,200 daily NRP flights. ATS accommodates 100 percent of all flights that want to take advantage of NRP and is working proactively with the user community to increase NRP participation.

While NRP has effectively addressed flexibility for aircraft that fly at higher altitudes and longer distances, flexibility in planning flights that traverse lower altitudes is also important. It is estimated that during a given day, pilots using the low altitude system (below 18,000 feet) will have to add approximately 125 thousand miles of extra distance to their flight plans as a result of published ATC preferred routes. ATC preferred routes are an important tool that help air traffic controllers organize traffic flows around major airports; it may never be possible or desirable to eliminate all published ATC preferred routes. **By FY 2000, the ATS performance target is to reduce the amount of extra flight plan miles associated with ATC preferred routes by 10 percent from 1994 baseline**. ATS is currently analyzing the ATC preferential route system to determine if ATC preferred routes could be eliminated without negatively impacting system operations. Initial analysis indicates that at selected locations, primarily in the western United States, many ATC preferred routes could be canceled.

Flexibility in flight planning offers users significant benefits. However, once an aircraft is airborne, the conditions for which a route and altitude were chosen may change. For example, winds may shift to make another route more desirable. The parameters that effect an optimal flight are very dynamic, and ATS' services must be flexible and capable of addressing the changing needs of users as they move through airspace.

One of the major constraints to flexible flight is the wide array of procedural restrictions used in the system. These restrictions are the tools used by controllers and traffic managers to limit workload and avoid congestion. They are often used to restrict aircraft movement during periods of severe weather. It is important that ATS limits or eliminates all *unnecessary* ATC restrictions. ATS has employed methods to track and evaluate the restrictions that are intended as flow strategies. Each day, facilities are required to justify the restrictions with the ATCSCC. Restrictions are then logged and the information is available for later analysis.

As noted earlier, ATC preferred routes can limit flexibility in flight planning. The ATC preferential route system also plays a role in the flexibility of in-flight operations. On a given day, approxi-mately

30 percent of flights operate between cities with published ATC preferred routes. Once airborne, the majority of these flights are allowed to deviate from these published routes. This ability to deviate from the ATC preferred route structure represents a significant portion of the flexibility allowed users in the ATM system. It is possible to quantify this flexibility by examining the percentage of segments that were flown off of the ATC preferred routes in each of the 20 contiguous en route ATC centers, as shown in Figure 4. Today, approximately 75 percent of the route segments between cities with published ATC preferred routes are actually flown off of the ATC preferred routes. **By FY 2000, the ATS performance target is to increase the percentage of flight segments flown off of ATC preferred routes to over 80 percent from 1996 baseline**.

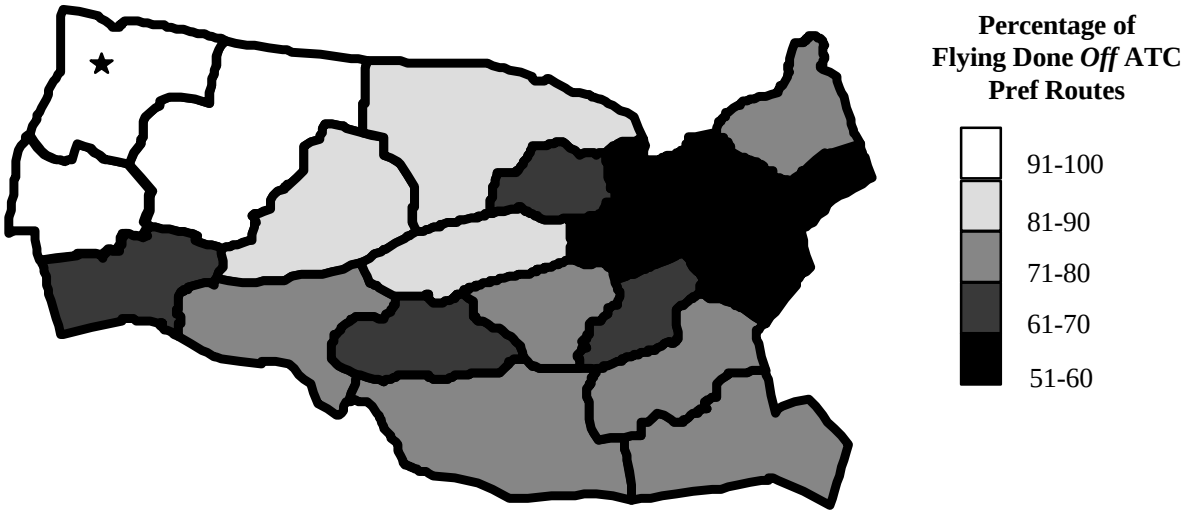

Figure 4. Percentage of Flights Operating Off ATC Preferred Routes by En Route ATC Center

Note: Seattle ARTCC, marked with an asterisk, is a special case. The percentage of activity off ATC preferred routes is low (30-50 percent), but the number of flights subject to ATC preferred routes is very small (about 8 percent of the number in ZNY). The low impact of ATC preferred routes in Seattle is consistent with the strategic goal of increasing flexibility; the percentage is unimportant in this case.

Strategies to Meet Flexibility Targets

To ensure a positive impact in the area of system flexibility, ATS services will evolve in the direction of the free flight concept, as espoused in the recently updated RTCA Free Flight Action Plan and Free Flight Phase 1. ATS is committed to implementing the concept within the timeframe envisioned in these plans. Integral to Free Flight are thrusts for reducing ATM system constraints, such as ATC preferred routing, static and dynamic flow restrictions, speed and altitude restrictions. To that end, ATS will introduce new procedures and new elements of ATM infrastructure in the 1998-2000 timeframe that will dramatically change the way services are provided to system users. The specific milestones that ATS will achieve in the 1998-2000 timeframe include:

- By December 1998, eliminate 7 percent of the published ATC preferred routes. By September 1998, complete the validation of 180 ATC preferred routes, and eliminate those that do not

meet the criteria for retention. In 1999, continue to evaluate preferred routes for possible elimination.

- Create in 1998 an ATS GPS System Operational Implementation Team (SOIT) to develop and implement enhanced area navigation procedures to provide better user flexibility.
- Manage restrictions systemwide to provide better utilization of the NAS. Develop criteria in 1998 to evaluate the impact of restrictions prior to operational implementation.
- Continue fielding the User Request Evaluation Tool (URET). This capability will identify potential conflicts with more certainty, thereby avoiding unnecessary aircraft maneuvers and improving user flexibility. Begin evaluations of the interfacility conflict probe capability in November 1997. Begin evaluations of the two-way HOST conflict probe capability at Memphis and Indianapolis ARTCCs in 1999. Transition URET daily use operations to Free Flight Phase 1 operational configuration in 2000.
- Continue the National Airspace Redesign, providing oversight of major airspace redesign and management activities. In July 1998, initiate the Eastern Triangle phase of the National Airspace Redesign. Regional and local airspace changes will continue and be incorporated into this national planning effort. By 2000, complete problem identification and alternative evaluations, and start environmental evaluations for the Eastern Triangle.
- Develop and distribute the SID/STAR Advisory Circular to the user community by March 1998. Implement 11 STARs and 24 SIDs by April 1998.
- Implement Oceanic Reduced Vertical Separation Minima (RVSM) in the North Atlantic at FL290-410 and in the Pacific by 2000 to improve flexibility in trans-ocean flights by increasing the choice of user operating altitudes.
- Expand field trials to two airports in 1999 to evaluate safety, environmental, and workload impacts of the possibility of relaxing the 250 knot restriction below 10,000 feet.
- Complete definition of controller pilot datalink communications (CPDLC) Build 1 messages, and critical design review by mid-1998. Implement CPDLC Build 1 capabilities at an En Route Center by 2002.

Outcome #4: Increase System Predictability

The predictability outcome evaluates the variation in the ATM system as experienced by the user. This variability is a result of the inherent uncertainty that accompanies the operation of the complex aviation system. The majority of system users rely on schedules that define when aircraft takeoff and when aircraft land. These schedules are central to the operations of almost all commercial flights, driving crew scheduling, ground service operations, and other operational components. Even the smallest deviation from the planned schedule can cause drastic impacts. This unpredictability often manifests itself as “pads” in flight schedules. These time inefficiencies in schedules can result in high operating and opportunity costs to users.

One of the most unpredictable portions of a flight is the time the aircraft spends on the ground, moving to (taxi-in) and from (taxi-out) the gate to the end of the runway. There are many factors that impact ground movement times, including level of demand, weather, and airport runway configuration. ATS

understands the criticality of providing service that supports predictable operations, and has identified a performance measure that looks at the predictability of ground movement times (Figure 5). In a review of the busiest 25 airports from January 1995 to August 1996, the total variability in the system ranged from 18 to 55 minutes a month for taxi-out times. There was overall less variability in taxi-in times, averaging about 10 minutes per month. The measure of ground movement predictability is a new measure. Performance target will be developed in FY-99.

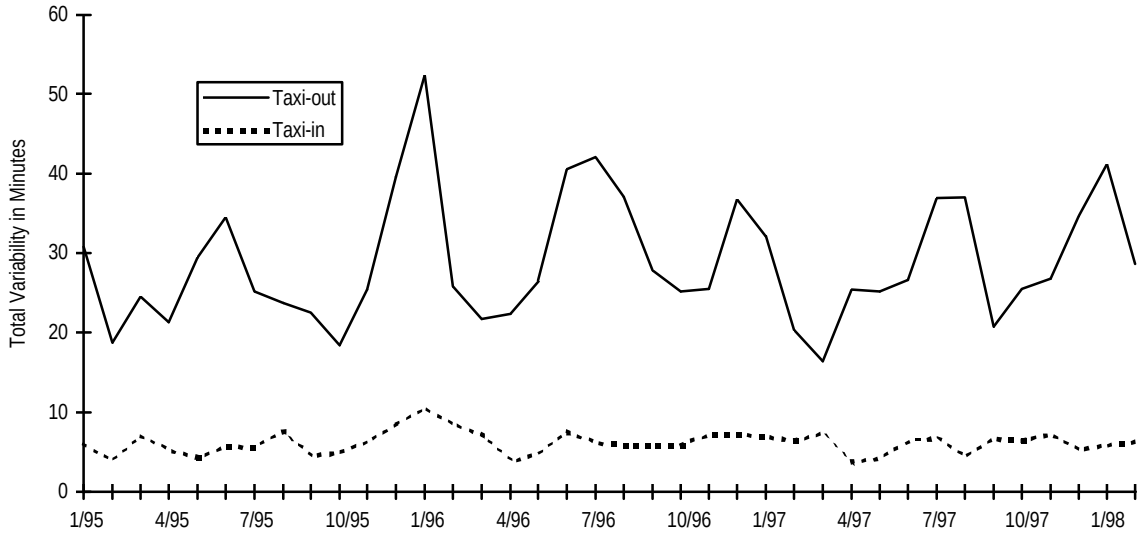

Figure 5. Ground Movement Predictability

Operating schedules are also affected by predictability in flight. ATS is continuing to evaluate and develop performance measures in this very important area and is specifically looking to enhance the measures included in this plan with improved data about flight movement times. This additional data was expected in 1997, but was not available until 1998. Improved measures will be utilized as soon as an adequate baseline is established. As ATS works to develop both in-flight and ground movement predictability measures, it will work to manage this variability and minimize its impact on users.

Strategies to Meet the Predictability Target

A key parameter in the plan to increase user predictability involves increasing the amount of information available to system users and involving them more interactively in operational decision-making. Collaborative planning between the airline operations centers and the ATCSCC will be enhanced by capabilities to exchange data. These capabilities will provide the most current schedules to traffic planners, resulting in better projections of demand and less disruptive flow management strategies. Controllers, planners, and users will be able to share common views of current conditions, such as severe weather patterns and restricted airspace usage, supporting their development of cooperative approaches to demand and capacity imbalances.

As weather is a main contributor to the uncertainty in the ATM system, improvements in obtaining and disseminating weather products will be made. These improvements will supply consistent information to both pilots and controllers so that they can realize the same degree of situational awareness. The specific milestones that ATS will achieve in the 1998-2000 timeframe include:

- In 1999, field and evaluate an initial visual collaboration capability between the ATCSCC and control facilities to support collaborative routing coordination with strategy evaluation capabilities.
- Implement the Special Use Airspace Management System (SAMS) in 1998 with detailed information about SUA status and usage.
- Implement improvements in obtaining and disseminating accurate weather data through the WARP program, which will be available in 1999, and through ITWS, which will begin testing in 1999.

Outcome #5: Increase User Access

Access to the ATM system and the services provided by ATS is the basic need of all airspace users. Users need to access airports, airspace, and services. To evaluate ATS' ability to meet the varying access needs of its diverse customers, ATS has identified a number of performance measures.

The fundamental point where most users gain access to the ATM system is through airports. ATS will increase access to the nation's airports during IFR weather conditions by accelerating the publication of GPS approach procedures. GPS approaches will provide users with more accurate and reliable course guidance and will provide users with better access to airports in adverse weather conditions. **The ATS performance target is to publish a minimum of 500 GPS approaches per year, over the next 3 years (FY 1998—FY 2000)**.

One of the critical components of this outcome is general aviation access to ATC services. While it is possible to count the number of ATC services provided, it is very difficult to assess the quality of those services, the number of VFR users who were denied service, or the number of VFR users who chose not to request services even though they desired them. ATS will address this problem by completing a user survey mechanism during 1998. Data from this survey will appear in future revisions of this business plan.

Another critical issue is utilization of SUA by both military users and civilian users. ATS has been working closely with the Department of Defense to improve civilian access to SUA when the military is not utilizing the airspace for its critical mission. At this time, performance measures for civilian utilization of SUA are still under development. Such measures will be applied in later plans as they becomes available.

A key aspect of measuring user access to the ATM system is through an examination of the access that users have to crucial information needed to operate flights. This information includes briefings on weather conditions and other factors associated with the flight environment, and is primarily provided to pilots. Flight service activities reflect the aviation information services provided by flight service stations and through direct user access services to pilots before and during flights (Figure 6). While

the number of total flight services provided by the flight service stations is forecast to decrease from 1996 levels, the number of direct services is expected to increase, resulting in a net increase in the number of flight service activities from 46.0 million in 1996 to 47.1 million in 1999. ATS will encourage increased use of the Direct User Access Terminal Service (DUATS) as a convenient way for pilots to obtain critical flight information.

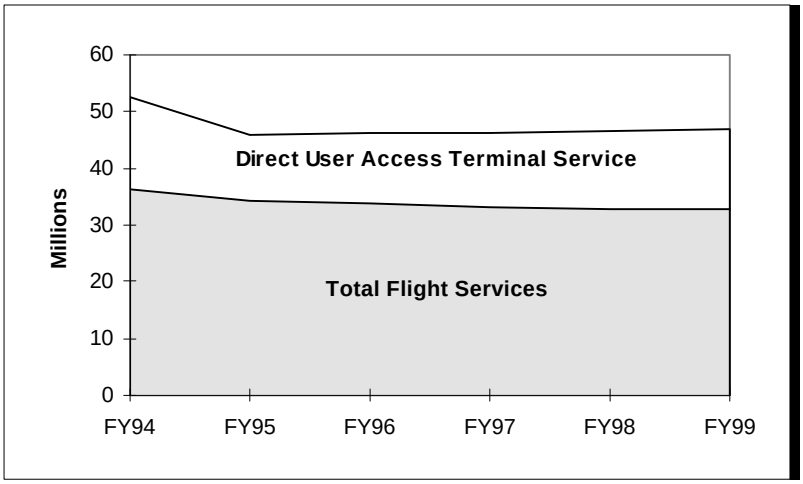

Figure 6. Flight Service Activities

While it is important to increase the overall numbers of users provided with information, ATS must also ensure that access to that information is timely. During adverse weather conditions, when flight service information is most critical, users are often required to hold until a specialist is available (Figure 7). **By 1999, the ATS performance target is to reduce the average call waiting time by 20 percent from 1994 levels**. This measure will not be tracked after 1999, because changes in call waiting times is not an accurate performance indicator for measuring user access. New measures are being explored to address this outcome for FY 2000.

Figure 7. Flight Service Average Call Waiting Times

Strategies to Meet the Access Target

To meet the identified performance targets associated with users' access, ATS has plans to enhance and change many of its services. Access to airport and airspace resources will be greatly enhanced by changes in navigation and landing services offered by GPS. Technological enhancements in aviation information services will improve the quality and quantity of information available for flight planning. New procedures and improved transfer of information about SUA usage will allow for improved civilian access to SUA when it is not being used by the military. The specific milestones that ATS will achieve in the 1998-2000 timeframe include:

- Supplement GPS navigation through completion of independent operational test and evaluation of the Wide Area Augmentation System (WAAS) in 1999.

- Publish 500 GPS approaches in 1998, 500 in 1999, and 500 in 2000.
- Implement the Spectrum Strategic Plan to guide spectrum management functions through 1999. Efficient and effective spectrum management is critical in ensuring that needed communications frequencies will be available to support the delivery of services.
- Use results of work with the general aviation community and pilot survey to develop better data sources and measurement strategies in 1999. In areas where quantitative measures cannot be developed, apply qualitative survey techniques.
- Begin implementation of the Operational and Supportability Implementation System (OASIS) in 1998, to provide improved flight services.
- In 1998, complete the Next Generation Air/Ground Communications (NEXCOM) investment analysis and decision. In 1999, develop and approve an Integrated Program Plan and System Specification, leading to contract award in 2001.
- Reroute calls from busy AFSS's to facilities with shorter waiting times.

Outcome #6: Improve Service Delivery By Increasing the Availability of Critical Systems

Traditionally, ATS has used an overall equipment availability rate as a useful indicator to represent the basic trends of NAS equipment. This overall availability indicator is computed by calculating the percentage of uptime relative to total available time. The overall availability time for NAS equipment is 99.2 percent and represents the average availability of all equipment types.

While the overall equipment availability rate offers some insight into the quality of operational services, a more detailed look at service availability is being taken to assess the impact of performance on service delivery, the effect of existing backups, and the most cost-effective means to increase service availability. During FY 1997, ATS has examined and developed better methods of measuring performance that focus on cost-effective *service* delivery, rather than equipment availability.

The NAS is an inherently complex system with multiple levels of redundancy to assure availability of key services. During the 1980s and into the 1990s, the overall availability of the NAS remained high due to technological improvements, improved maintenance techniques, and the high-level of redundancy. Due to the complexity and redundancy of the NAS, sophisticated performance tracking tools will be required to provide management with the more detailed information required to accurately assess the health of the NAS and plan appropriate responses. Automated tools have recently become available to measure key performance parameters of the NAS equipment against established metrics. With the information these emerging tools provide, we are beginning to better understand the performance of the NAS and quickly pinpoint specific causes of poor performance. This information will enable our managers to focus resources on areas that need attention.

The bulk of the NAS equipment is used to provide separation assurance, aviation information, search and rescue, and traffic management services. As Figure 8 (below) shows, the availability of these four services is high (99.6 percent to 99.9 percent versus 99.2 percent for all NAS equipment). Additional analysis shows that the operational availability was down for the two remaining services, navigation and landing. Using the agreed upon facilities to form the service areas, and looking at a

5 year span, the performance measure is a relatively good indicator of performance. With regard to the landing systems, the FAA has had a program to replace numerous older Instrument Landing Systems (ILS) installations. This replacement effort requires that the ILS and all its supporting systems, such as marker beacons and approach lights, be removed from service for extended periods of time. While this did result in a slight overall decrease in the operational availability of the total NAS, the high-level of critical services delivery was being provided. As we approach the end of this replacement program, availability is already showing improvement, and this trend can be expected to continue.

The ATS performance target is to maintain operational availability of equipment at current levels while minimizing the impact on the quality and efficiency of the system during periods of service interruptions.

We are currently tracking NAS equipment performance by ATS service areas: separation assurance, aviation information, search and rescue, navigation, landing, and traffic management. Figure 8 shows the operational availability of these six service areas over the past 6 years compared to the national average.

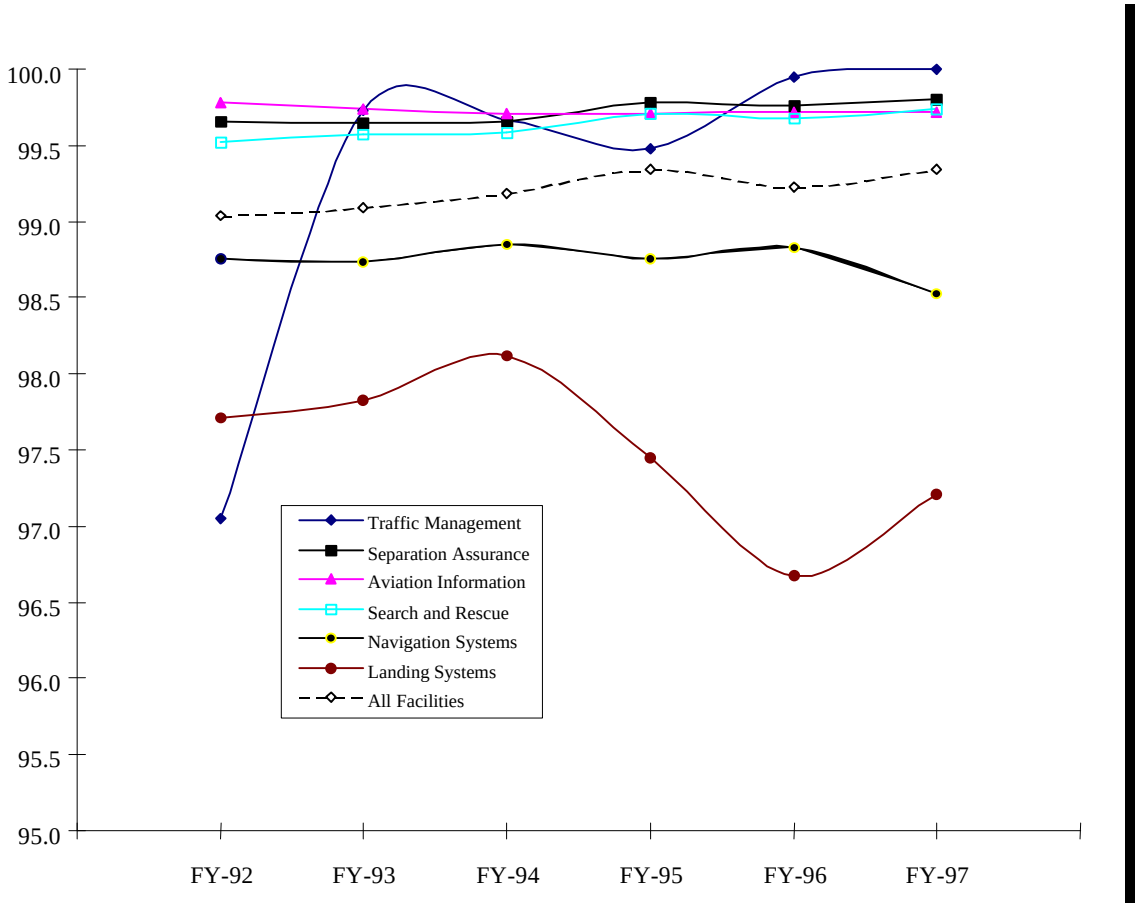

Figure 8. Operational Availability by ATS Service Area

Strategies to Improve the Availability Outcome

- Increasing infrastructure service and equipment availability rates result from a multi-faceted approach that requires improvements in the aging infrastructure of the national aviation system and also better methods for maintaining and operating the resulting system. A key element of ATS' plans to address this outcome is the establishment of the NAS Infrastructure Management program (NIMS). NIMS represents a fundamental shift in the way AF does business—from a decentralized equipment maintenance organization to centralized service management of the NAS. The NIMS structure and supporting technologies will enable NAS managers to determine the best method of providing and supporting the infrastructure services; understand the costs vs. performance for providing the service; and exploit opportunities for cost avoidance by making sound business decisions based on information gleaned from analytical tools. Technological improvements—such as deployment of modern displays, automation tools, decision support tools, and communications systems—will also support improvements in the availability outcome. The specific milestones to be achieved in the 1998-2000 timeframe include:
- Field DSR beginning in FY 1998. Twelve DSR systems will be delivered to en route centers in 1999; full implementation to be completed by May 2000.
- Continue working with STARS Steering Committee to resolve human factors issues through 1998. Complete STARS Initial System Capability procedural changes for Boston and deploy Early Display Configuration (EDC) at Reagan-National Airport by March 1999.
- Deploy new mainframe hardware of the en route IBM 3083 HOST computers, and associated software changes to all ARTCCs in 1999.
- Conduct additional in-depth "Supportability Studies" of systems and equipment that are experiencing performance problems and develop performance improvement plans.
- Establish the National Operations Control Center (NOCC) in 1999.
- During 1999, implementation of the NAS Service Management Policy will be described in an "FAA NAS Service Management System" document.
- In 1998, complete a NAS Service Management Policy that includes development of a system performance measure for service availability.
- Demonstrate initial operating capability for the NIMS in 2000.
- In 2000, establish initial operating capability of Operational Control Centers (OCC) at three locations.

Outcome #7: Increase Productivity

ATS' operational performance outcomes—increasing safety, flexibility, predictability, access, maintaining equipment availability, and decreasing delays—must be achieved within an environment of limited resources. The reduced level of agency funding experienced since 1992 has resulted in relatively flat ATS budgets in the past 4 years. Despite a 6 year decline in staffing levels, ATS operational outlays increased slightly each year to accommodate merit and longevity raises, inflation,

and an increase in the cost of employee benefits. Growth in the operations budget, however, was largely offset by reductions in facilities and equipment (capital) spending.

ATS' FY 1997 budget, at $5.471 billion, is 1.4 percent below FY 1996 budget levels as a result of reductions in the capital acquisition appropriation. ATS requested an 8.2 percent increase in its overall funding levels for FY 1998 over the previous year. While some increases in controller and system specialist staffing are planned in the FY 1997-99 time frame, successful accomplishment of ATS' performance targets within the current constrained resource environment presents a major management challenge. The budget climate predicted over the next 3 years will require ATS to become more efficient and productive if customer demand is to be met and performance improvements are to be realized.

ATS measures productivity from two perspectives:

- Aviation activity per controller
- Number of facilities maintained per system specialist

In addition to refining and improving these current productivity measures, new measures and data requirements are being identified. Once selected, new data sources will be established and collection systems implemented in order to establish new productivity baselines and targets.

ATS measures the productivity of the controller workforce in terms of aviation activity compared to the size of the controller workforce (CWF). Aviation activity is defined as the sum of aircraft operations at ARTCCs, airport operations, and instrument operations at FAA terminals. Figure 9 illustrates that during the period from 1992 to 1996, the CWF declined 5 percent while the demand for air traffic services remained relatively constant.

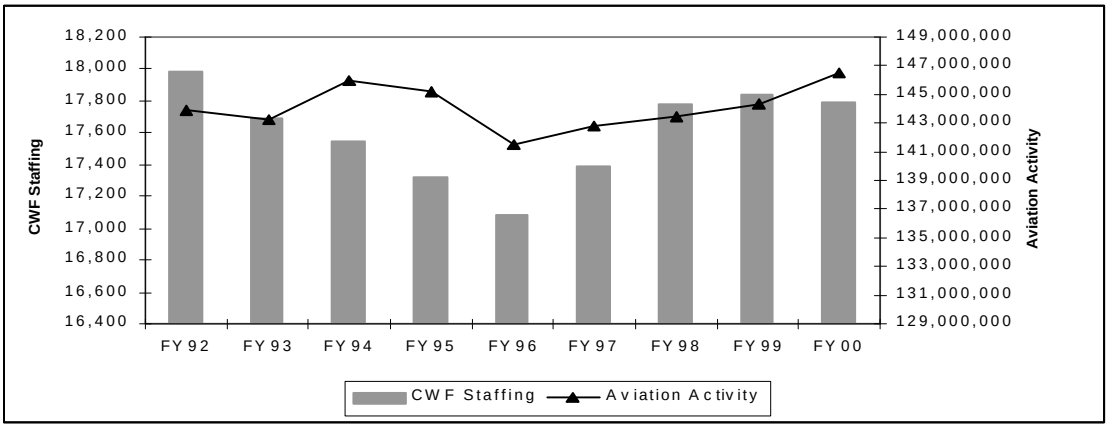

Figure 9. Aviation Activity and Controller Workforce Staffing Levels

Increases in service demand, coupled with declines in the controller workforce and modest advances in technology and procedures produced productivity gains from 1992 to 1995 (Figure 10).

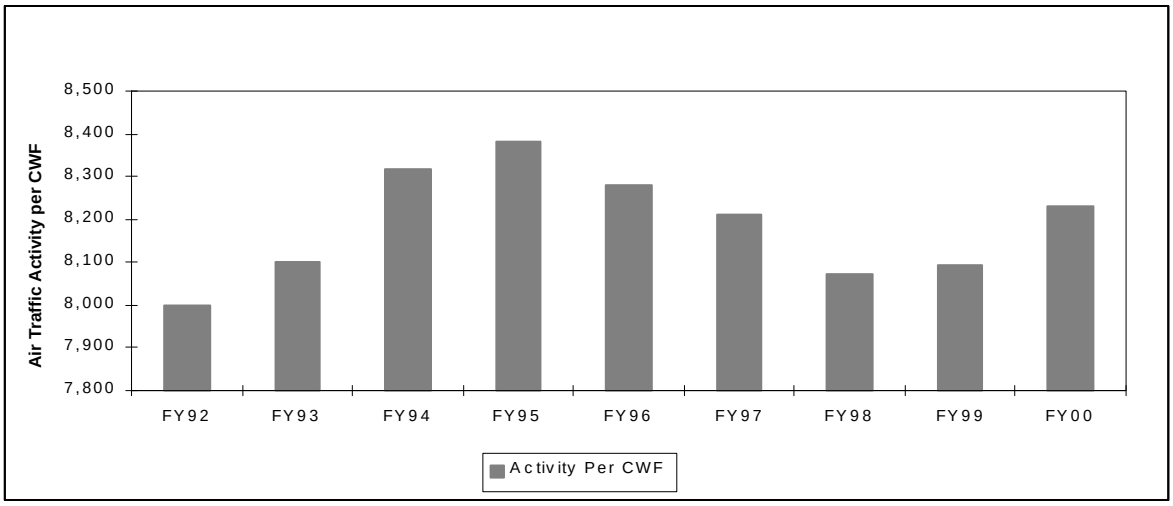

Figure 10. Average Activity Per Controller (1992-2000)

In the FY 1997-99 time frame, controller staffing at centers and towers is expected to increase by 452 employees to manage anticipated growth in air traffic activity and prepare for expected controller retirements. This staffing increase will result in a temporary decline in operational output per employee in the short term as some of these new hires progress through a developmental period. ATS will also begin deploying new controller display and automation systems in 1998. Implementation of these new systems will also contribute to the temporary dip in productivity as the workforce trains for and adapts to new equipment. **By 1999, ATS' target is to increase the number of aircraft operations per controller by 2 percent over 1994 levels.** However, by the year 2001, controller workforce productivity is expected to exceed 1997 levels and continue an upward trend thereafter.

ATS also measures the productivity of its system specialists in the Airway Facilities (AF) organization. Growth in the number of facilities maintained by system specialists (through ownership, maintenance, or inspection) is expected to continue. These facilities, therefore, impose workload requirements and impact staffing.

Staffing in AF during the 1998-2000 time-frame is expected to grow less than 3 percent, as measured by facility maintenance end of year (FM EOY) employment shown in Figure 11. The combination of increased workload and relatively stable staffing have produced significant increases in system specialist productivity in the past, a trend that must be continued in the future. Additionally, AF has implemented many management and business process engineering enhancements to improve staffing efficiencies such as remote maintenance monitoring and service management coverage, Operations Control Centers (OCC), and reduction of organizational layers (improved employee:supervisor ratios). **By 1999, ATS' target is to increase the number of facilities maintained per system specialist by 19 percent over 1994 levels.**

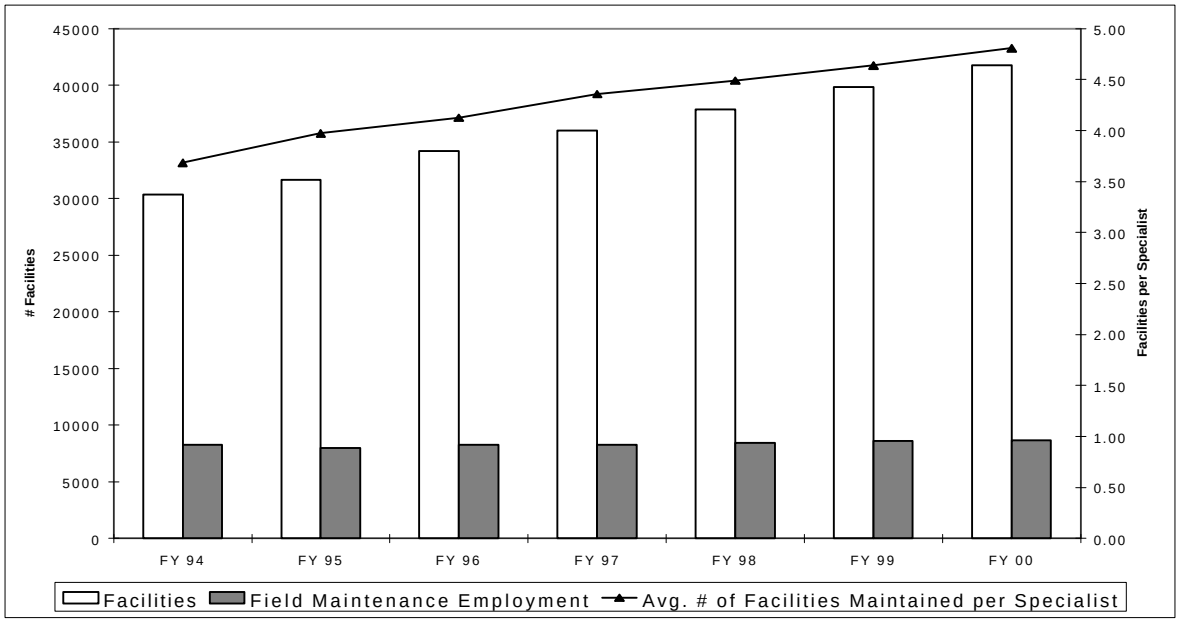

Figure 11. Average Number of Facilities Maintained Per System Specialist (FY 1994-2000)

Strategies to Improve the Productivity Outcome

ATS has been able to realize productivity improvements through automation, improved information systems, and management initiatives such as improved training, streamlining, reorganization, consolidation of facilities, and outsourcing. Such efforts will be continued during the next 36 months. For example, implementation of the NIMS—including more widespread use of remote monitoring, maintenance, and control of equipment—is a key strategy for improving both equipment availability and system specialist productivity. In addition, a number of initiatives are underway or planned for the FY 1997-99 time frame which will improve the quality, completeness, and availability of information for use by senior executives, managers, and employees. The insight into system cost and performance afforded by this information is a necessary prerequisite to making timely and cost-effective business decisions. Armed with a better understanding of the cost drivers of its business, ATS will be able to realize even greater productivity improvements in future years.

The specific milestones for improving productivity to be achieved in the FY 1998-2000 time frame include:

- Establish the National Operations Control Center (NOCC) in 1999.
- In 2000, establish initial operating capability of Operational Control Centers in three locations.
- Continue implementation of the bar coding asset system (BCATS) within selected regions in 1999 and 2000.
- In order to effectively and efficiently transition to a user fee environment, ATS will undertake the following action in FY 1999:

- Continue to support the work of the Assistant Administrator for Financial Services, in developing an agency cost accounting system.

→ ATS has made a major organizational commitment to provide high quality information to senior executives, managers, and employees to assist them in controlling the cost of service and improving system performance. In the FY 1998-2000 timeframe, ATS will:

- Continue implementation of the Staffing Cost-Analysis Tool (SCAT) at ARTS facilities by FY 1999, and all remaining air traffic facilities by January 2000. In 1999, provide the capability to interface SCAT with the ATS Executive Information System.
- Continue incorporation of existing mission critical information through the NAS Support Operations Center and regional office level Regional Information System (REGIS) operations in 1999.
- Conduct annual review of existing and planned ATS information systems (other than real-time NAS systems), to identify redundancy, overlap, and duplication.
- Continue national field level deployment of AF and AT REGIS prototypes in 1999.
- Continue deployment of Executive Information System, incorporating all required existing mission critical and GPRA-related information in 1999. In 2000, update and enhance decision support tools and exception reporting available to executives in areas of cost of operations accounting, training and certification, personnel information, GPRA performance measures, and Capital Investment Plan (CIP) projects.

→ Finalize ATS detailed functional requirements and programming business rules for terminal service by December 1998. Achieve operational capability of cost accounting system for all ATS services by April 1999.

→ Participate fully during 1998 in working groups established to implement intermodal strategies and exploit efficiencies.

Outcome #8: Create a Model Work Environment and Foster Employee Involvement/Effective Partnerships

ATS' operational performance is achieved by employees who are free to focus on their responsibilities without worry that their political affiliation, race, color, religion, national origin, or some other characteristic unrelated to job performance negatively impacts their career opportunities or contributions to the organization.

Moreover, a diverse workforce produces effective business teams and more creative and viable approaches to problem solving. ATS must foster employee involvement and creative partnerships to realize a productive and customer-focused operating environment.

ATS is committed to providing its employees with ongoing, clear, and concise communications and information about issues that affect them. This will enable them to make smart business decisions and informed suggestions for improvements and increase their sense of well being. Information should be

concise and current, thereby enabling employees to be effective participants in driving operational requirements.

Strategies to Create a Model Work Environment and Fostering Employee Involvement/Effective Partnerships

ATS employees will be able to focus on mission accomplishment if the workplace is free from discrimination and harassment, promotes and values diversity, and supports employee partnerships. The specific milestones for creating a model work environment are:

- Develop an implementation strategy for the Model Work Environment which includes developing policy and guidance.
- Implement affirmative recruitment efforts including broad innovative outreach to fill vacancies while reducing specific areas of under-representation.
- Ensure that all new facilities meet requirements for accessibility for people with disabilities.
- Design an infrastructure to determine critical success factors for evaluating a Model Work Environment.

Performance Planning into the Future

This Performance Plan establishes the outcomes, measures, and targets that will guide ATS' operational and management decisions over the next three years. As the single largest line of business in the FAA, it is a key component in achieving the goals set out in the FAA Strategic Plan. Furthermore, ATS' establishment of firm targets for performance reinforces ATS' commitment to providing continuous improvement in its service delivery and customer-focused decisionmaking.

While the performance plan will be updated once a year in compliance with the requirements of GPRA, performance planning itself is an ongoing activity. The ATS Management Team is assessing the organization's progress against its performance targets and milestones contained in the performance plan on a regular basis, and will make tactical adjustments as necessary to achieve the desired performance outcomes. The Performance Plan—and most importantly the outcome targets—will provide the basis for operational and program plans. In addition to frequent senior management reviews, the outcome targets and key milestones will be integrated into individual managers' performance plans within the ATS organization. This is a critical link that emphasizes ATS' commitment to quality services and management accountability.